

Claims

1. A process of the production of a product of interest in an F1 seed obtained by a hybridization of a first and a second transgenic parental plant, said hybridization generating a genetic endowment in said F1 seed for said production by combining in said F1 seed first and second partial genetic endowments of said first and second transgenic parental plants,
followed by isolating said product of interest from said F1 seed or a seedling thereof.
2. A process of the production of a product of interest in an F1 seed obtained by a hybridization of a first and a second transgenic parental plant, said hybridization generating a genetic endowment in said F1 seed for said production by combining in said F1 seed first and second partial genetic endowments of said first and second transgenic parental plants, whereby said product of interest is not expressed in said first or said second parental plant,
followed by isolating said product of interest from said F1 seed or a seedling thereof.
3. The process according to claim 1 or 2, wherein said product of interest is an RNA, a protein, an enzyme, or a chemical compound like a polymer the synthesis of which said enzyme is involved in.
4. A process of the production of a product of interest in an F1 seed obtained by a hybridization of a first and a second transgenic parental plant, said hybridization generating a genetic endowment in said F1 seed for said production by combining in said F1 seed first and second partial genetic endowments of said first and second transgenic parental plants, whereby said product of interest is not expressed in said first or said second parental plant, said product of interest being a protein of interest,
followed by isolating said product of interest from said F1 seed or a seedling thereof.
5. The process according to any one of claims 1 to 4, wherein said genetic endowment comprises a replicating DNA or a replicating RNA that is involved in said production of said product of interest.
6. A process of the production of a product of interest in an F1 seed obtained by a hybridization of a first and a second transgenic parental plant, said hybridization generating a genetic endowment in said F1 seed for said production by combining in

said F1 seed first and second partial genetic endowments of said first and second transgenic parental plants, whereby

said genetic endowment comprises a replicating DNA or a replicating RNA that is involved in said production of said product of interest,

followed by isolating said product of interest from said F1 seed or a seedling thereof.

7. The process according to claim 5 or 6, wherein said replicating DNA or said replicating RNA codes for said product of interest.
8. The process according to any one of claims 5 to 7, wherein said replicating DNA or said replicating RNA is generated in said F1 seed from a component of said first partial genetic endowment and a component of said second partial genetic endowment.
9. The process according to any one of claims 5 to 9, wherein said replicating DNA is a DNA viral replicon that is generated or rendered replicating by said hybridization.
10. The process according to any one of claims 5 to 8, wherein said replicating DNA is generated by DNA site-specific recombination.
11. The process according to claim 10, wherein said DNA site-specific recombination is catalyzed by a recombinase, an integrase, or a flippase.
12. The process according to any one of claims 10 to 11, wherein said replicating DNA is generated by combining in said F1 seed a site-specific recombinase from a first parental plant and a precursor of said replicating DNA from a second parental plant.
13. The process according to any one of claims 5 to 12, wherein said replicating DNA is an autonomous plasmid.
14. The process according to any one of claims 5 to 8, wherein said replicating RNA is an RNA viral replicon that is generated or rendered replicating by said hybridization.
15. The process according to any one of claims 5 to 8 or 14, wherein said replicating RNA is generated from a component of said first partial genetic endowment and a component of said second partial genetic endowment by RNA specific recombination.

16. The process according to claim 15, wherein said replicating RNA is generated by the transcription of DNA of said first partial genetic endowment, whereby said transcription is caused by a component or expression product of said second partial genetic endowment.
17. The process according to claim 16, wherein said replicating RNA is encoded by the female parental plant involved in said hybridization.
18. The process according to any one of claims 5 to 17, wherein transcription of RNA or proteins necessary for formation of said replicating DNA or RNA is controlled by a constitutive promoter, seed-specific promoter, or chemically regulated promoter.
19. The process according to any one of claims 5 to 17, wherein said replicating DNA or replicating RNA is of plant viral origin.
20. The process according to any one of claims 5 to 19, wherein said replicating DNA is based on a geminivirus.
21. The process according to any one of claim 5 to 19, wherein said replicating RNA is based on a plus-sense single-stranded RNA virus.
22. The process according to claim 21, wherein said replicating RNA is based on a tobamovirus.
23. The process according to claim 22, wherein said tobamovirus is a Tobacco Mosaic Virus.
24. The process according to any one of claims 5 to 23, wherein replication of said replicating DNA or RNA renders the plant grown from said F1 seed incapable of sexual reproduction.
25. The process according to any one of claims 1 to 24, wherein sexual reproduction of a plant grown from said F1 seed is impaired, preferably abolished, more preferably said F1 seed is sterile.
26. A process of the production of a product of interest in an F1 seed obtained by a hybridization of a first and a second transgenic parental plant, said hybridization

generating a genetic endowment in said F1 seed for said production by combining in said F1 seed first and second partial genetic endowments of said first and second transgenic parental plants, wherein said F1 seed is incapable of sexual reproduction, followed by isolating said product of interest from said F1 seed or a seedling thereof.

27. The process according to any one of claims 24 to 26, wherein the plant grown from said F1 seed is incapable of sexual reproduction due to blocking plant development before reaching the reproductive growing stage.
28. The process according to claim 27, wherein said blocking of plant development is achieved by tissue-specific expression of a toxic substance or protein interfering with normal plant development.
29. The process according to claim 28, wherein said protein is selected from the group consisting of barnase, Shiga protein, plant transcription factors, or enzymes controlling hormonal status of the plant.
30. The process according to any one of claims 1 to 29, wherein said product of interest accumulates in the developing embryo, in the endosperm, in cotyledons or in germinating seeds.
31. The process according to any one of claims 1 to 30, wherein said plants are monocots or dicots.
32. The process according to any one of claims 1 to 31, wherein the female parental plant of said hybridization is male-sterile.
33. The process according to any one of claims 1 to 32, wherein said product of interest is encoded in the partial genetic endowment provided by the female parental plant of said hybridization, said product of interest preferably being a protein of interest.
34. The process according to any one of claim 1 to 33, wherein production of said product of interest in said seed is triggered by said generation of said genetic endowment.
35. Product produced or producible according to the process of any one of claims 1 to 34.

36. Seeds produced or producible according to the process of one of claims 1 to 34.
37. The seeds according to claim 36, wherein sexual reproduction of a plant grown from said seed is impaired, preferably said plant is sexually sterile.